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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/667,629

09/22/2003

Marie Denison

MUH-12796

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10/26/2006

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EXAMINER

KALAM, ABUL

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 10/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/667,629

Applicant(s)

DENISON ET AL.

Examiner

Abul Kalam

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/26/06</u> . | 6) <input type="checkbox"/> Other: _____  |

***Claim Status***

1. In the amendments filed on July 31, 2006, applicant amended claims 1 and 3-6 and cancelled claim 2. Thereby, claims 1 and 3-9 remain pending in the application.

***Claim Objections***

2. Claims 1 and 3-9 are objected to because of the following informalities:

In line 18 of claim 1, the limitation "in dependence on the sinker voltage" is unclear because of the sentence structure. The sentence needs to be rewritten in order to clearly explain what the applicant is referring to with the phrase, "in dependence on the sinker voltage." Claims 3-9 depend from claim 1, and thus contain the same informality.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 1 and 3-9** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 15-17 of claim 1, the limitation "varying...a spacing between said inner cells" is inconsistent with the limitation "at least two inner cells," in line 6 of claim 1, because at least three inner cells are required in order to vary a spacing between the inner cells, as claimed. Claims 3-9 depend from claim 1, and thus contain the same informality as claim 1. Furthermore, Claims 3, 5 and 6 also describe wherein a spacing

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between said inner cells is varied, and thus are also inconsistent with the limitation "at least two inner cells."

In lines 2-4 of claim 4, the limitation "said body zones are wider and/or have a larger radius of curvature in a vicinity of said sinker zone than at a distance from said sinker zone," is unclear and ambiguous because the phrase "at a distance" is vague and provides multiple interpretations. "At a distance" could mean the cells are right next to the sinker zone or far away from the sinker zone. Therefore, the cells, which are "at a distance" from the sinker zone," could either be farther away from or closer to the sinker zone, than the cells in a vicinity of said sinker zone. Thus, for examination purposes, the Office will interpret claim 4, based on the specification as --The semiconductor component according to claim 3, wherein said body zones, which are located closer to the sinker zone, have a larger width and/or radius of curvature than the body zones which are located farther away from the sinker zone --.

In lines 2-4 of claim 5, the limitation "said spacing between said inner cells has a larger spacing distance at a distance from said sinker zone than in a vicinity of said sinker zone," is unclear and ambiguous because the phrase "at a distance" is vague and provides multiple interpretations. "At a distance" could mean the cells are right next to the sinker zone or far away from the sinker zone. Therefore, the cells, which are "at a distance" from the sinker zone," could either be farther away from or closer to the sinker zone, than the cells in a vicinity of said sinker zone. Thus, for examination purposes, the Office will interpret claim 5, based on the specification as --The semiconductor component according to claim 3, wherein a spacing distance between inner cells, which

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are located farther away from the sinker zone, is larger than a spacing distance between inner cells, which are located closer to the sinker zone --.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1, 3, 4, 6 and 9** (*as best interpreted by the Office*) are rejected under 35 U.S.C. 102(b) as being anticipated by **Contiero et al. (5,589,405)**.

With respect to **claim 1**, **Contiero** teaches a quasi-vertical semiconductor component (**FIGS. 2 and 5**), comprising:

a surface;

a semiconductor substrate (**P+ Substrate; FIG. 2**);

a well (**N-epi; FIGS. 2 and 5**);

at least two inner cells (**P-body with n+ source regions; FIGS. 2 and 5**) disposed in said well;

a buried layer (**N+ Buried Layer; FIG. 2 and 5**) disposed between said well (**N-epi**) and said semiconductor substrate (**P+ Substrate; FIG. 2**);

a sinker zone (**N sinker; FIG. 5**) disposed outside a region of said inner cells (**P-body with n+ source regions**) and defining a sinker voltage (**drain voltage**), said

sinker zone connecting said buried layer (**N+ Buried Layer**) to said surface of the semiconductor component; and

said inner cells having a substantially similar values for forward currents and reverse currents being dependent on the sinker voltage and independent of a positional relationship to said sinker zone by varying a given radius of curvature of said inner cells (**col. 2: Ins. 20-34**).

Note that the claimed limitation, "said inner cells having a substantially similar values for forward currents and reverse currents being dependent on the sinker voltage and independent of a positional relationship to said sinker zone," is drawn to a function. Furthermore, an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also *In re Swinehart*, 439 F.2d 210 212-13, 169 USPQ 226, 228-29 (CCPA 1971); *In re Danyl*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).

With respect to **claim 3**, **Contiero** teaches the semiconductor component set forth in claim 1 above, wherein said inner cells (**P-body with n+ source regions**) have body zones (**P-body; FIG. 5**) with a given width and a given radius of curvature, and

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said given radius of curvature of said body zones of said inner cells is varied (**col. 2: Ins. 20-34**).

With respect to **claim 4**, **Contiero** teaches the semiconductor component set forth in claim 3 above, wherein said body zones (**P-body; FIG. 5**) have a larger radius of curvature in a vicinity of said sinker zone (**N sinker; FIG. 5**) than at a distance from said sinker zone (**col. 2: Ins. 20-34**).

With respect to **claim 6**, **Contiero** teaches the semiconductor component set forth in claim 1 above, further comprising doped regions (**p+ region in P-body; FIG. 5**) disposed in said well (**N-epi**), a variation of said given radius of curvature of said inner cells is effected by said doped regions (**col. 2: Ins. 20-34**).

With respect to **claim 9**, **Contiero** teaches the semiconductor component set forth in claim 1 above, wherein said well (**N-epi**) has an edge region (**interface between N sinker and N-epi**) and said sinker zone (**N sinker**) is disposed at said edge region (**FIG. 5**).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 7 and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Contiero et al. (5,589,405)** as applied to claim 6 above.

With respect to **claim 7, Contiero** teaches the semiconductor component as set forth in claim 6 above, with the exception of disclosing:

wherein said doped regions are introduced by high-energy ion implantation.

However, the limitation "said doped regions are introduced by high-energy ion implantation" is a product by process limitation and thereby, given no patentable weight.

A product by process claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al.*, 218 USPQ 289, 292 (Fed. Cir. 1983); *In re Brown*, 459 F.2d 531, 535, 173 USPQ 145, 147 (CCPA 1969); *Buono v. Yankee Maid Dress Corp.*, 77 F.2d 274, 279, 26 USPQ 57, 61 (2d. Cir. 1935); and particularly *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process steps, which must be determined in a "product by process" claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious product produced by a new method is not a patentable product, whether claimed in "product by process" claims or not.

With respect to **claim 8, Contiero** teaches the semiconductor component set forth in claim 7 above, wherein said doped regions (**p+ region of P-body**) lie between said well (**N-epi**) and said body zone (**P-body**) of said inner cells (**FIG. 5**).



***Response to Arguments***

6. Applicant's arguments with respect to claims 1 and 3-9 have been considered but are moot in view of the new ground(s) of rejection.

***Allowable Subject Matter***

7. Claim 5 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: With respect to claim 5, the prior art of record neither anticipates nor renders obvious all the limitations of the claim including: a semiconductor component comprising: at least two inner cells disposed in a well; a sinker zone disposed outside a region of the inner cells and connecting to a buried layer disposed between the well and the substrate; wherein the inner cells have body zones with a given width and radius of curvature; and wherein the spacing between the inner cells is varied such that a spacing distance between inner cells, which are located farther away from the sinker zone, is larger than a spacing distance between inner cells, which are located closer to the sinker zone.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

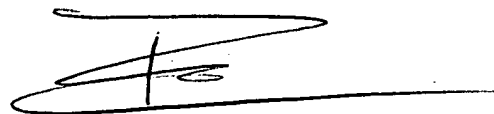
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Abul Kalam whose telephone number is 571-272-8346. The examiner can normally be reached on Monday - Friday, 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Abul Kalam  
October 13, 2006

A handwritten signature in black ink, consisting of a stylized 'T' followed by a horizontal line and a small flourish.

THAO X. LE  
PRIMARY PATENT EXAMINER